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DISSERTATION...

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Title...

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1 Introduction

Autonomous cars are currently a topic of great interest. Around the world the biggest private companies or government's initiatives are developing self-driving vehicles (uber, google, britol car citations), competing for new emerging market. Each company focuses efforts in different direction. The companies are either trying to develop an all-round car that could perform in both city and on highways or restrict the usage to particular types of roads (tesla). Or anything in between. The most significant commercial initiatives include Google driverless car, Tesla, Uber (). Government founded initiatives include Venturer and ...

- Background of the problem, context of the research, reasons why the study was carried out, significance of the study

Many experts around the world are trying to predict how autonomous cars will influence our lives. One of the questions is how the traffic itself will change. Most of the experts agree that in the next decades we will observe gradual process of increasing the share of autonomous cars on our roads. In that time human-driven cars and self driving cars will have to successfully interact with each other. According to predictions the fully automated traffic will become reality only around year 2060 or year 2040 in more optimistic predictions and first commercial autonomous cars are already appearing on the roads (singapore, uber). Although there are numerous studies on many aspect of autonomous driving as well as on interactions between regular cars in all-human-traffic there is little research on interactions between these two types of vehicles and all it's consequences.

- A statement of the problem to be addressed

The focus of this research is to investigate how autonomous cars will influence traffic itself and how human and autonomous cars will interact with each other.

- clear and succinct statement of research questions, aims and objectives.

The main aim of the research was trying to predict what will happen when autonomous cars are introduced to the traffic. Results obtained were analysed

from the point of view to traffic parameters such as velocities, densities, congestion and from the point of view how individual drivers reacted differently when autonomous vehicle was encountered.

The main objective of the project was to create a an on-line traffic simulation that would allow to connect multiple people together at the same time. People were asked to drive a car

How scope was reduced The original scope of the project included also in-silico implementation that would be using remotely controlled "slot-cars". It was believed that that physical model would have features that could not be accounted for or predicted in computer simulation. It was estimated for around 50% of implementation effort. However, the final version of the project the physical model was not implemented. After the project went into development the advantages of creating a physical model appeared less and less attractive. Especially compared to the cost of implementation. Original idea assumed using digital slot-car set with cars and track, as well as computer vision to track vehicles on the track and live video streaming to multiple computers. After more careful consideration the benefits of implementing above described would be very minor or none. In addition to this, implementing the computer simulation consumed more time that estimated.

It has to be admitted that scope was drastically limited in terms of implementation effort. It did not, however, have much impact on the quality of the research and conclusions. One would even venture to say that project should only consist of computer simulation even if more time and resources were allowed for project execution.

A road map of what is going to be discussed The project consisted of three main parts. First one was implementation of the simulation. This accounted for around 50% of all efforts. the chapter on Research Methodology is mostly dedicated to this.

2 Literature review

3 Research Methodology

Justify the structure of the project. Why the experiment was a key part. Why this was the best option rather than for example use data from some database?...hmmm

3.1 Experiment design and implementation

Justify all major design decisions. Plenty of them! All the actions undertaken to ensure most meaningful results

3.1.1 some other subsections

3.1.2 Data collection

How the experiment was eventually conducted

3.2 Software development

Justify all major design decisions

3.2.1 Simulation master design

3.2.2 Client's interface design

General description Simplifications and yet still accounting for most important parts of the car model

3.2.3 Car control

3.3 Communication between machines

From one point of view this a tightly coupled with software development but the way communication was established doesn't matter from the point of view of

software structure. Simply speaking the comms should only meet some requirements derived from the main piece of software and the details of implementation doesn't matter. This was a significant part of the job and its an achievement on its own.

3.4 Autonomous car model

Say why this is important from the point of view of results obtained. Again justify all design decisions

Figure 1: Percentage of older people in the UK 1985, 2010, 2035 [?]

Figure 2: Percentage of persons aged 65 and over EU-27, 1985, 2010, 2035 [?
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